

B<sup>1</sup>  
cmcd.

On the other hand, the second rotor core as a reluctance torque rotor is provided with an almost true round peripheral shape, and is provided with a flux barrier without a permanent magnet placed in the permanent magnet insertion hole and without a concave portion formed between poles.

The arrangement described above ensures that the armature reaction magnetic flux cannot easily pass through the first rotor core with the permanent magnet embedded therein, because of the V shape concave portion provided between poles in the vicinity of the outer surface, whereas armature reaction magnetic flux can pass through the interpolar core of the second rotor core without a permanent magnet placed in the permanent magnet insertion hole and without a concave portion formed between poles.

Page 6, second full paragraph:

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A further characteristic of the present invention is found in that the number of the flux barrier on the second rotor core greater than that of the permanent magnet insertion holes provided on the first rotor core to ensure easy passage of armature reaction magnetic flux, thereby allowing reluctance torque to be increased.

Page 10, last paragraph:

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The second rotor core 2 comprises a flux barrier 8 having identically the same shape as that of the permanent magnet insertion hole 3, namely, the convex V-shaped flux barrier

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cmd'd. 8 with respect to the shaft of rotor 10, as well as a rotor shaft hole 9 for being fitted to the shaft (not illustrated), and a rivet hole 11 for securing the second rotor core.

Page 13, second full paragraph:

B4 By contrast, when the arrangement of the second rotor core 2 shown in Fig. 4 is used, passage of the armature reaction magnetic flux through the interpolar core 13 of the second rotor core is easy.

Page 14, second full paragraph:

B5 The permanent magnet insertion hole 3 of in the first rotor core 1 is made in identically the same form as the flux barrier 8 of the second rotor core 2. This has an effect of increasing the mass production efficiency of core sheets for the first and second rotor cores formed by lamination of the core sheets.

Page 14, fourth full paragraph:

B6 In Fig. 5, the same components as those in Fig. 2 will be assigned with the same numerals to avoid redundant explanation. The difference from Fig. 2 is that the width of the flux barrier 8 of the second rotor core 2 is smaller.

[Page 14, last paragraph:]

In other words, the width of flux barrier 8 is reduced similarly to the flux barrier 81 so that the permanent magnet 4 will not enter the second rotor core 2 when the permanent

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magnet 4 is inserted in the axial direction of the first rotor core 1. Then the permanent magnet 4 is positioned. This has the effect of reducing the number of production processes -- another advantage in addition to the basic performance described in the first Embodiment.

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Page 15, last paragraph:

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In other words, the position of the flux barrier 8 is shifted toward an outer diameter direction so that the permanent magnet 4 will not enter the second rotor core 2 when the permanent magnet 4 is inserted in the axial direction of the first rotor core 1. Then the permanent magnet 4 is positioned. This has the effect of reducing the number of production processes -- another advantage in addition to the basic performance described in the first embodiment.

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Page 16, second full paragraph:

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In the drawing, the same components as those in Fig. 2 will be assigned with the same numerals to avoid redundant explanation. The difference from Fig. 2 is that the flux barrier 8 of the second rotor core 2 is divided into two flux barriers 83 and 84 in order to ensure easy passage of armature reaction magnetic flux. This provides the same basic performance as that of the first embodiment, and will increase reluctance torque.

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Page 17, second paragraph:

B<sup>9</sup> Correspondingly, the shape of the flux barrier 85 of the second rotor core 2 is also changed. This has the effect of providing the basic performance described in the first embodiment.

Page 17, fourth paragraph:

B<sup>10</sup> In the drawing, the same components as those in Fig. 2 will be assigned with the same numerals to avoid redundant explanation. The difference from Fig. 2 is that the permanent magnet insertion hole 32, permanent magnet 42 in the first rotor core 1 and the flux barrier 86 of the second rotor core 2 are formed like a letter U (an arched form).

Page 18, second full paragraph:

B<sup>11</sup> In the drawing, the same components as those in Figs. 1 and 2 will be assigned with the same numerals to avoid redundant explanation. The difference of Fig. 10 from Figs. 1 and 2 is that balance weights 19 and 20 are on the first rotor core 1 and the second rotor core 2 respectively, and the flux barrier 8 is filled with the balance weight 20 of non-magnetic substance on the second rotor core 2 side.

Page 19, second full paragraph:

B<sup>12</sup> In the drawing, the same components as those in Fig. 2 will be assigned with the same numerals to avoid redundant explanation. The difference from Fig. 2 is that the flux barriers 86 and 87 of the second rotor core 2 are arranged to form a dual V-shape in order to ensure easy passage of armature reaction magnetic flux.

Page 20, second paragraph:

B13 Correspondingly, the shape of flux barriers 88 and 89 of the second rotor core 2 is also changed. This will provide the same basic performance as that of the first embodiment.

Page 20, last paragraph:

B14 Correspondingly, the flux barrier 8 of the second rotor core 2 is also changed into flux barriers 801 and 802 of dual U-shaped (arched) structure. This will provide the same basic performance as that of the first embodiment, and will increase reluctance torque in the second rotor core 2.

Page 25, second full paragraph:

B15 By contrast, in the permanent magnet type rotating electrical machine 63 according to the present invention, a concave portion is provided on the interpolar core 5 of the first rotor core 1 where permanent magnet 4 is inserted to reduce the change in reactance on the rotor core 1 side.

✓ In the Claims

✓ Please cancel claims 4, 6, and 7 without prejudice or disclaimer of the subject matter thereof.

Please amend the claims to read as follows:

B16 1: (Amended) A permanent magnet rotating electrical machine comprising:

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cont.  
a stator provided with concentrated winding armature wiring in multiple teeth on a stator core,

a first rotor core split into multiple parts in an axial direction and containing permanent magnets built in multiple permanent magnet insertion holes having substantially V shapes, and

a second rotor core for producing reluctance torque,

wherein said first rotor core is arranged so that a gap length of a magnetic path on the q-axis side is greater than that on the d-axis side.

2. (Amended) A permanent magnet rotating electrical machine comprising:

a stator provided with concentrated winding armature wiring in multiple teeth on a stator core,

a first rotor core split into multiple parts in an axial direction and containing permanent magnets built in multiple permanent magnet insertion holes having substantially V shapes, and

a second rotor core for producing reluctance torque,

wherein a concave portion is provided between poles in a vicinity of an outer surface on said first rotor core, and a flux barrier having almost the same form as that of said permanent magnet insertion hole is formed on said second rotor core in a cross section in a radial direction.

3. (Amended) A permanent magnet rotating electrical machine comprising:

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cont.*  
a stator provided with concentrated winding armature wiring in multiple teeth  
on a stator core,

a first rotor core split into multiple parts in an axial direction and containing  
permanent magnets built in multiple permanent magnet insertion holes having  
substantially V shapes, and

a second rotor core for producing reluctance torque,

wherein a concave portion is provided between poles in a vicinity of an outer  
surface on said first rotor core,

a flux barrier having almost the same form as that of said permanent magnet  
insertion hole, and

an almost true round peripheral shape is formed on said second rotor core in a  
cross section in a radial direction.

5. (Amended) A permanent magnet rotating electrical machine according to  
any one of Claims 1 to 3 wherein

a width of said permanent magnet insertion hole on said first rotor core is  
greater than that of a flux barrier provided on said second rotor core.

8. (Twice amended) A permanent magnet rotating electrical machine  
according to any one of Claims 1-3 and 5 wherein

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arrangement of said permanent magnet insertion hole provided on said first rotor core is different from that of a flux barrier provided on said second rotor core.

9. (Twice amended) A permanent magnet rotating electrical machine according to Claim 8 wherein

the number of said flux barriers provided on said second rotor core is greater than that of said permanent magnet insertion holes provided on said first rotor core.

10. (Twice amended) A permanent magnet rotating electrical machine according to Claim 8 wherein

said permanent magnet insertion holes provided on said first rotor core and said flux barriers provided on said second rotor core are formed in a straight line or a shape like letter U or V.

11. (Twice amended) A permanent magnet rotating electrical machine according to Claim 10 wherein

said permanent magnet insertion holes provided on said first rotor core and said flux barriers provided on said second rotor core are formed with a shape like a letter U or V.

12. (Twice amended) A permanent magnet rotating electrical machine according to Claim 11 wherein



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amcl'd.* non-magnetic substances are inserted in said flux barriers provided on said second rotor core.

13. (Twice amended) A permanent magnet rotating electrical machine according to Claim 12 wherein

the permanent magnet rotating electrical machine is driven by a 180-degree current-applied sinusoidal wave inverter without magnetic pole position sensor.

14. (Twice amended) A compressor arranged to be driven by a permanent magnet rotating electrical machine according to Claim 13.

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